Claim 20 is submitted to be non-obvious in view of and patentable over the references of record, and in particular Hsueh et al., in that whether considered alone or in combination the references fail to teach or suggest an absorbent structure comprised of the combination of an absorbent member that is at least partially made of fibers, a reinforcing member at least partially embedded in the absorbent member and constructed of first and second strands arranged in a non-orthogonal relationship to define openings in the reinforcing member, and at least some of the fibers of the absorbent member extending through openings in the reinforcing member and entangling with other fibers of the absorbent member.

Hsueh et al. disclose an absorbent composite comprising a porous macrostructure of absorbent gelling particles and a substrate. With reference to Fig. 1, the absorbent composite 70 comprises an absorbent layer 71 (the macrostructure layer) bonded to a supporting substrate layer 72. The absorbent layer is formed from of a plurality of absorbent gelling particles that are interconnected by intermolecular cross-linking of the absorbent molecules. In the embodiment of Fig. 9, the absorbent gelling particles are interconnected by cross-linking to form a net like configuration of the macrostructure layer 81, e.g., having openings therein. The substrate layer 82 (Fig. 9) is formed of a cellulosic material, such as a cellulose foam layer, and is chemically bonded to the macrostructure (e.g., in face-to-face relationship) by a cross-linking agent.

Figures 4 and 5 of Hsueh et al. illustrate a multilayered absorbent composite 70 in which a plurality of substrate layers 72 a,b,c,d,e are intermittently attached or bonded to a plurality of absorbent macrostructure layers 71 a,b,c,d, e.g., in a layered approach. As best understood in view of the

undersigned's prior phone conference with the Examiner, the Office's characterization of this disclosure is that one middle absorbent composite (e.g., the combination of macrostructure layer 71b and substrate 72b) is equated to the reinforcing member recited in claim 20 while upper and/or lower composites (e.g., upper composite formed by layers 71a, 72a and lower composite 71c and 72c) comprise the recited absorbent member.

Irrespective of the Office's characterization of Hsueh et al., the cited reference fails to disclose or even suggest fibers of the absorbent member passing through openings in the reinforcing member and being entangled with other fibers of the absorbent member as recited in amended claim 20. In particular, Hsueh et al. teach chemically bonding the macrostructure layer to the substrate layer. See, e.g., column 23, lines 12-65. Such chemical bonding clearly does not result in absorbent member fibers passing through the reinforcing member and becoming entangled with other fibers of the absorbent member.

In the Response to Arguments section of the final Office action (at page 2, item 1, first paragraph), the Office relies on the disclosure by Hsueh et al. at column 23, lines 21-23 that the chemical bonding that occurs to bond the absorbent layer to the substrate layer can be hydrogen bonding, ionic/coulombic bonding, polymer entanglement bonding, and covalent bonding. In particular, the Office equates polymer entanglement bonding to the recitation in claim 20 that the fibers from the absorbent member pass through the openings of the reinforcing member and entangle with other fibers from the absorbent member. Applicants respectfully disagree.

Polymer entanglement bonding is properly classified by Hsueh et al. as a chemical bonding because it is a micro-chemical bonding between two surfaces (e.g., between the

absorbent macrostructure layer and the substrate layer) that occurs as a result of a reaction induced by a reactant, such as the adduct described by Hsueh et al. immediately following (i.e., lines 23-31) the passage relied on by the Office. The reaction results in surface-to-surface, microstructure entangling of polymer chains to chemically bond the layers together.

The fiber entanglement recited in claim 20 is clearly not a chemical bonding, including a polymer entanglement bonding. Rather, the fiber entanglement recited in claim 20 is a physical entanglement in which entire fibers (and not such polymer chains on a microstructural level) of the absorbent member pass through the openings in the reinforcing member and become physically entangled with other fibers of the absorbent member.

Moreover, claim 20 specifically recites that fibers of the absorbent member 1) pass through openings in the reinforcing member and 2) entangle with other fibers of the absorbent member. That is, the recited entanglement is not a surface-to-surface connection and certainly is not between the fibers of the absorbent member and the reinforcing member. Rather, the recited entanglement is of the absorbent member with itself. Hsueh et al. clearly do not disclose these two elements of claim 20.

As is particularly disclosed and shown by Hsueh et al., the chemical bonding, including the polymer entanglement bonding, recited by Hsueh et al. is a surface-to-surface (i.e., face-to-face) reaction between the absorbent layer and the substrate layer. See, e.g., Figs. 1, 2, 9 and 10, and column 23, lines 13-16. As a result, any "polymer entanglement bonding" occurs only at the surface-to-surface contact between the absorbent layer and the substrate layer and therefore there are no fibers

of the substrate layer that pass through openings in the absorbent layer.

Hsueh et al. also specifically teach that the chemical bonding, including the polymer entanglement bonding, is a bonding of the absorbent layer material to the substrate layer material. See column 23, lines 13-31. Thus the "polymer entanglement" relied on by the Office as the recited entanglement, is between the absorbent layer material and the substrate layer, and not the absorbent layer material being entangled with itself. In contrast, claim 20 recites the fibers of the absorbent member are entangled with other fibers of the absorbent member, not with the reinforcing member.

There is also nothing in Hsueh et al. that would motivate one skilled in the art to replace the chemical bonding taught by Hsueh et al. with the passing of absorbent member fibers through the reinforcing member and entangling these fibers with other fibers of the absorbent member. Indeed, the absorbent composite relies on the chemical bonding to also interconnect the gel particles of the macrostructure absorbent layer.

For these reasons, claim 20 is submitted to be non-obvious in view of and patentable over the references of record.

Claims 21-27 and 29-31 depend directly or indirectly from claim 20 and are submitted to be non-obvious in view of and patentable over the reference of record for at least the same reasons as claim 20.

Claim 32

Claim 32 is directed to an absorbent structure that comprises an absorbent member that is at least partially made of fibers and a reinforcing member for maintaining the structural integrity of the absorbent structure that is at least partially

embedded in the absorbent member. Claim 32 further specifies that the reinforcing member is connected to the absorbent member and at least partially gathers the absorbent member to form rugosities on the surface of the absorbent member.

Claim 32 is submitted to be non-obvious in view of and patentable over the references of record, and in particular Hsueh et al., in that whether considered alone or in combination the references fail to disclose an absorbent structure in which a reinforcing member is at least partially embedded in a fibrous absorbent member, with the reinforcing member being connected to the absorbent member and at least partially gathering the absorbent member to form rugosities on the surface of the absorbent member.

As best understood from the undersigned's prior phone conference with the Examiner and the statements made at page 5 of the final Office action, the Office's position is that the absorbent composite 70 of Hsueh et al. is stretchable (relying on the disclosure at column 20, lines 42-47 and as a result of swelling of the gel particles upon absorbing liquid, rugosities will form in the surface of the absorbent composite. However, Hsueh et al. do not disclose that the absorbent composite is stretchable. Rather, the passage relied on by the Office merely states that the substrate layer 72a may be made from elastomers. There is no teaching that once the absorbent layer 71a is bonded to the substrate layer 72a to form the composite that the entire composite is stretchable. This is an assumption impermissibly made by the Office.

More notably, Hsueh et al. further lack any disclosure that the absorbent composite 70 (e.g., the combination of the absorbent layer 71a and the substrate 72a in Fig. 5) is gathered by a reinforcing member (e.g., the substrate layer 72a) to form

rugosities on the surface of the absorbent layer, or on the surface of the absorbent composite. In fact, there is no disclosure or even a suggestion found anywhere in Hsueh et al. that rugosities or gatherings are formed in the surface of the absorbent composite 70, either before or after swelling of the gel particles of the absorbent layer 71a, or that such rugosities are desirable.

The final Office action, at page 5, takes the position that Hsueh et al. discloses that "the components are stretched to form voids." Applicants' were unable, however, to find such a teaching in Hsueh et al. Rather, at column 6, line 65 through column 7, line 12, Hsueh et al. disclose that the voids are formed by interconnecting strands of gel particles in a pattern that yields the voids.

And in any event, swelling of the gel particles would, at best, result in stretching of the absorbent composite which would tension the surface of the composite, not gather and form rugosities therein. Moreover, once the gel particles are swelled, no retraction of the composite can occur and even if it could, it would only retract to its initial, dry state that is also ungathered and has no rugosities. Also, at column 7, lines 6-23 in reference to the embodiment of Fig. 9, where the absorbent composite is formed as a net-like structure it has a plurality of voids. Upon wetting of the gel particles, the particles swell and expand into the void space so that "planar expansion of the absorbent composite can be minimized."

Thus, there is no teaching or suggestion found anywhere in Hsueh et al. to provide a reinforcing member that gathers the absorbent member to form rugosities in the outer surface of the absorbent member.

For these reasons, claim 32 is submitted to be non-obvious in view of and patentable over the references of record.

In the event that the Office maintains its rejection of claim 32, applicants respectfully request direct citation to the passage(s) of Hsueh et al. relied on by the Office as disclosing that the voids are formed by stretching, and that rugosities are formed in the surface.

Claims 33-43 and 70 depend directly or indirectly from claim 32 and are submitted to be patentable over the references of record for at least the same reasons as claim 32.

Claim 39

Claim 39 depends from claim 32 and further recites that the reinforcing member is comprised of strands arranged to cross over one another at junctions to define openings in the web and that the strands are joined at some of the junctions. In contrast, the capillary strands of the macrostructure layer are formed by chemically cross-linking and thereby bonding together the gel particles at these intersections. Accordingly, there are no strands that can cross over one another at the junctions. Rather the strands are formed only after the gel particles are interconnected.

For these additional reasons, claim 39 is further submitted to be non-obvious in view of and patentable over the references of record.

Claim 51

Claim 51 as amended herein is directed to an absorbent structure for absorbing liquid that comprises an absorbent member that is at least partially made of fibers and a reinforcing member for maintaining the structural integrity of

the absorbent structure, that is at least partially embedded in the absorbing member and that has a non-uniform transverse width. The reinforcing member has openings therein. At least some of the fibers of the absorbent member extend through the openings in the reinforcing member and are entangled with other fibers of the absorbent member.

Amended claim 51 is submitted to be non-obvious in view of and patentable over the references of record, and in particular Hsueh et al., for substantially the same reasons as claim 20. That is, whether considered alone or in combination the references fail to disclose or suggest fibers of the absorbent member extending through openings in the reinforcing member and being entangled with other fibers of the absorbent member.

Claims 52-65 depend directly or indirectly from claim 51 and are submitted to be non-obvious in view of and patentable over the reference of record for at least the same reasons as claim 51.

Claim 58

Claim 58 depends from claim 51 and further recites that the reinforcing member is comprised of strands arranged to cross over one another at junctions to define openings in the web and that the strands are joined at some of the junctions.

Claim 58 is further submitted to be non-obvious in view of and patentable over the references of record for substantially the same reasons as claim 39.

Claim 60

Claim 60 depends from claim 51 and further recites that the reinforcing member is relaxed from a stretched condition in which connection of the reinforcing member to the absorbent

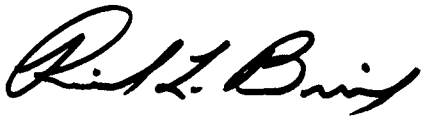
member is made. Hsueh et al. clearly fail to teach or otherwise even suggest such a feature. Rather, if anything, Hsueh et al. at best teach that the absorbent composite may expand slightly upon wetting. But there is no disclosure of the absorbent composite relaxing from the stretched condition.

For these additional reasons, claim 60 is further submitted to be non-obvious in view of and patentable over the references of record.

CONCLUSION

In view of the foregoing, favorable consideration and allowance of claims 20-27, 29-43, 51-65 and 70 is respectfully requested.

Respectfully submitted,



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Via EFS